

RESPONSE TO THE SCIENTIFIC PANEL REVIEW REPORT

Chapter 5

BIRDS

**POTRERO HILLS LANDFILL PHASE II EXPANSION
SOLANO COUNTY, CALIFORNIA**

Submitted to:

San Francisco Bay Conservation and Development Commission

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1.0 INTRODUCTION

As part of the Bay Conservation and Development Commission's (BCDC) review of the marsh development permit for the Phase II Potrero Hills Landfill expansion, an independent review was conducted by a panel of scientists of the biological resource impacts and mitigation for the proposed project (Airola et al., 2007). Chapter 5 of the review document provides the results of an analysis, conducted by w. David Shuford, Senior Biologist with PRBO Conservation Science in Petaluma, CA. The review focused on impacts to birds and their habitats on the Phase II landfill and value of the mitigation lands to compensate for those impacts. He also assessed the potential indirect impacts to birds on and in the vicinity of the landfill from subsidized predators (i.e., American crows [*Corvus brachyrhynchos*] and common ravens [*Corvus corax*]).

In preparing his report, Mr. Shuford visited the Phase II expansion area and mitigation properties for three and one half days between late May and mid-July 2006.

1.1 PROJECT BACKGROUND

Figure 1 shows the layout of the Phase I (current) landfill, footprint of the proposed Phase II landfill, and proposed mitigation lands. The proposed landfill expansion will result in the conversion of 167.63 acres¹ of primarily non-native grassland which includes the filling of approximately 2.42 acres of Section 404 jurisdictional wetlands and other waters of the U.S., 0.076 acre of isolated waters of the State, and 0.61 acre of pond habitat.

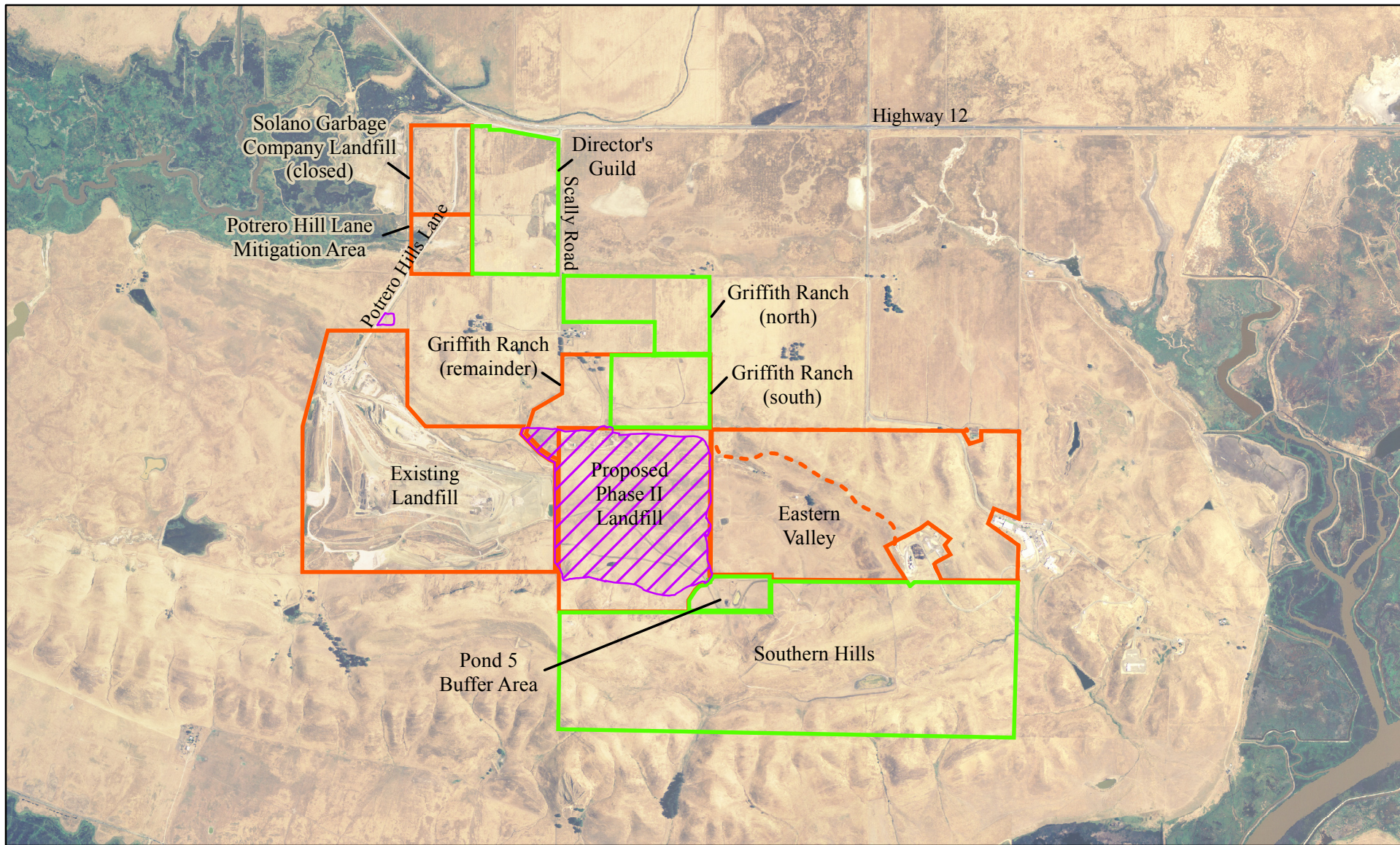
Within the landfill-owned parcels in the Potrero Hills, there are seven man-made ponds, six of which are documented CTS breeding ponds (Ponds 1-5, and 7). Ponds 1 and 4 are located within the footprint of the proposed Phase II landfill, Pond 5 is located on an eastward extension of the Phase II parcel designated as the Pond 5 Buffer Area, Pond 7 is located on the Southern Hills parcel, and Ponds 2, 3, and 6 are located on the Eastern Valley area of the Hillbourne Ranch Parcel (Figure 1). The loss of Ponds 1 and 4 will be mitigated as part of the project. Ponds 5 and 7 will be preserved on mitigation lands (i.e., Pond 5 Buffer area and Southern Hills parcels) as part of the project. All mitigation lands proposed as part of the project will be managed for the benefit of wildlife and plant habitat in perpetuity through a conservation easement and will have a management endowment. Ponds 2, 3, and 6 (also CTS breeding sites) located in the Eastern Valley, will not be impacted by the proposed project with the land continuing to be used as grazing land. However, neither a conservation easement nor a management endowment is proposed for the Eastern Valley.

¹ The size and configuration of the Phase II landfill has changed since the preparation of BCDC's Final Scientific Review Report. In the Final Scientific Review Report, the landfill footprint and adjacent impacted area was designed to be 178.34 acres; however, the current design will only result in the conversion of 167.63 acres.

In addition to the Southern Hills parcel and Pond 5 Buffer Area, the Director's Guild parcel and some of the Griffith Ranch parcel (Figure 1) will be preserved as plant and wildlife habitat through conservation easements. Approximately 4.07 acres of seasonal wetland and a 0.35 acre CTS breeding pond were originally proposed for construction on the Griffith Ranch parcel. In the original mitigation and monitoring plan (MMP) (LSA and ESP, 2006), only the northern portion of Griffith Ranch was proposed for inclusion in the mitigation for the Phase II landfill expansion. The southern half of the parcel was to be left undeveloped except for the construction of a small power plant and sedimentation basin, and was not included in the mitigation lands. With the relocation of the power plant to a site within the existing Phase I landfill footprint and removal of the sedimentation basin from the Griffith Ranch parcel, more of the Griffith Ranch parcel is now proposed for preservation as mitigation land. As part of the increased mitigation on the Griffith Ranch parcel, an additional 0.35 acre CTS breeding pond is now proposed at the location of the former power plant site in the southern portion of the parcel, approximately 1,100 feet northeast of Pond 1. This pond is in addition to the seasonal wetland complex and CTS breeding pond proposed in the original MMP.

A large playa pool is located on the Director's Guild site. As part of the mitigation, the playa pool outlet pond would be modified to prevent fish that move up the drainage channel from Hill Slough from entering the playa pool complex. The playa pool complex begins on the Director's Guild site and continues to the east on parcels not owned by the landfill. The playa pool provides habitat for a variety of birds including killdeer (*Charadrius vociferous*), black-necked stilts (*Himantopus mexicanus*), American avocets (*Recurvirostra americana*), red-winged blackbirds (*Agelaius phoeniceus*), and numerous others. The larger playa pool to the east of the Director's Guild attracts hundreds of gulls throughout the winter and spring.

Portions of the Potrero Hills Landfill Phase II expansion area and proposed mitigation areas are designated as critical habitat for four species: vernal pool tadpole shrimp (*Lepidurus packardii*), vernal pool fairy shrimp (*Branchinecta lynchi*), Conservancy fairy shrimp (*Branchinecta conservatio*), and Contra Costa goldfields (*Lasthenia conjugens*). Designated critical habitat for vernal pool tadpole shrimp and vernal pool fairy shrimp encompasses the entire Potrero Hills. Neither of these vernal pool crustaceans occur on the proposed Phase II expansion site as determined through protocol-level surveys, although both species are known from areas north of the Potrero Hills, in particular on the Director's Guild parcel (vernal pool tadpole shrimp) and the Potrero Hills Lane mitigation site (vernal pool fairy shrimp). Critical habitat for Contra Costa goldfields and Conservancy fairy shrimp also includes portions of the Griffith Ranch and the Director's Guild parcel. Conservancy fairy shrimp and Contra Costa goldfields occur on the Director's Guild parcel.



0 1,500 3,000
FEET





-  PROPOSED PHASE II IMPACT AREA
-  MITIGATION AREA
-  OTHER LAND OWNED BY LANDFILL
-  SURVEYS ON THIS PARCEL LIMITED TO WEST OF DASHED LINE

FIGURE 1

*Potrero Hills Landfill
Phase II Expansion*

Potrero Hills
Landfill Parcels

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1.2 ORIGINAL MITIGATION PROPOSAL (MMP)

The original mitigation proposal described in the original mitigation and monitoring plan (MMP) for the project (LSA and ESP, 2006) and analyzed by the scientific review panel included the following mitigation components:

- Preservation of upland habitat totaling 517.08 acres on the Southern Hills parcel, Pond 5 Buffer, Griffith Ranch and Director's Guild parcels;
- Preservation of 0.79 acre of existing California tiger salamander (CTS) breeding habitat and 8.83 acres of potential CTS breeding habitat on the Southern Hills parcel, Pond 5 Buffer, and Director's Guild parcel (9.62 acres total);
- Creation of an additional 0.73 acre of CTS breeding habitat on the Southern Hills (1 pond) and Griffith Ranch (1 pond) parcels, and restoration of 0.42 acre of potential CTS breeding habitat in the play pool on the Director's Guild parcel;
- Preservation of 5.52 acres of seasonal wetland on the Southern Hills and Griffith Ranch parcels, and 53.10 acres on the Director's Guild parcel;
- Creation of 4.07 acres of seasonal wetlands on the Griffith Ranch parcel;
- Preservation of 1.86 acres of waters of the U.S. on the Southern Hills and Director's Guild parcels, and;
- Creation of 1.80 acres of waters of the U.S. on the Griffith Ranch and Director's Guild parcels.

Table A summarizes the total area of upland and aquatic mitigation by parcel as outlined in the original MMP.

Table A: Mitigation Acreage and Type by Parcel – Original MMP Version

	CTS Upland Habitat	CTS Pond Habitat		Seasonal Wetlands		Waters of the U.S.		Total (acres)
	Preserve	Preserve	Create	Preserve	Create	Preserve	Create	
Southern Hills	421.11	0.34	0.35	5.25	0.00	1.65	0.00	428.70
Pond 5 Buffer Area	17.65	0.45	0.00	0.00	0.00	0.00	0.00	18.10
Griffith Ranch	57.85	0.00	0.38	0.27	4.07	0.00	1.03	63.60
Director's Guild	20.47	8.83	0.42	53.10	0.00	0.21	0.77	83.80
Total	517.08	9.62	1.15	58.62	4.07	1.86	1.80	594.20
Mitigation Ratio*	2.1:1	15.8:1	1.9:1	28.5:1	2.0:1	4.2:1	4.1:1	

* preserved/created:impacted

Total Impact Area = 244.93 acres, Wetland Impact area = 2.42 acres, Pond Impact Area = 0.61 acres (Ponds 1 and 4),
Upland Impact Area = 241.9 acres

1.3 REVISED MITIGATION PROPOSAL

With the changes that the PHLF has made to the location of the power plant and sedimentation basin on Griffith Ranch (i.e., the proposed relocation of a landfill gas-powered electrical generation facility and sedimentation basin from the Griffith Ranch to the existing and proposed landfill areas), additional areas will be incorporated into the mitigation lands for this project, namely additional upland habitat in the southeastern portion of the Griffith Ranch parcel and creation of an additional CTS breeding pond at the former power plant site. The revised project description and mitigation plan will be detailed in a revised mitigation and monitoring plan (to be developed in response with PHLF's formal consultation with USFWS). This revised plan has not been reviewed by the scientific review panel. Based on this revised project description and mitigation plan, the mitigation components would be as follows:

- Preservation of upland habitat totaling 565.29 acres on the Southern Hills, Pond 5 Buffer, Griffith Ranch, and Director's Guild parcels,
- Preservation of 0.79 acres of existing CTS breeding pond and 8.83 acres of potential breeding pond habitat on the Southern Hills, Pond 5 Buffer, and Director's Guild parcels (9.62 acres total),
- Creation of an additional 1.08 acres of breeding pond the Southern Hills (1 pond) and Griffith Ranch (2 ponds) sites, and restoration of 0.42 acre of potential breeding pond in the playa pool on Director's Guild,
- Preservation of 5.52 acres of seasonal wetland on the Southern Hills and Griffith Ranch parcels, and 53.10 acres on the Director's Guild parcel,
- Creation of 4.07 acres of seasonal wetlands on the Griffith Ranch parcel,
- Preservation of 1.86 acres of waters of the U.S. on the Southern Hills and Director's Guild parcels, and
- Creation of 1.80 acres of waters of the U.S. on the Griffith Ranch and Director's Guild parcels.

Table B summarizes the total area of upland and aquatic mitigation by parcel for the revised mitigation plan.

Table B: Revised Mitigation Acreage and Type by Parcel – Increased Griffith Ranch Plan
(Highlighted cells reflect changes from the values in Table A)

	CTS Upland Habitat	CTS Pond Habitat		Seasonal Wetlands		Waters of the U.S.		Total (acres)
	Preserve	Preserve	Create	Preserve	Create	Preserve	Create	
Southern Hills	421.11	0.34	0.35	5.25	0.00	1.65	0.00	428.70
Pond 5 Buffer Area	17.65	0.45	0.00	0.00	0.00	0.00	0.00	18.10
Griffith Ranch	106.06	0.00	0.73	0.27	4.07	0.00	1.03	112.16
Director's Guild	20.47	8.83	0.42	53.10	0.00	0.21	0.77	83.80
Total	565.29	9.62	1.50	58.62	4.07	1.86	1.80	642.76
Mitigation Ratio*	3.4:1	15.8:1	2.5:1	28.5:1	2.0:1	4.2:1	4.1:1	

* preserved/created:impacted

Total Impact Area = 167.63 acres, Wetland Impact area = 2.42 acres, Pond Impact Area = 0.61 acres (Ponds 1 and 4),
 Upland Impact Area = 164.60 acres

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2.0 METHODS

Comments and recommendations regarding issues related to birds on the Phase II expansion parcel and mitigation sites were reviewed by Timothy Lacy, Wildlife Biologist, at LSA Associates, Inc. (LSA). The comments as outlined by Mr. Shuford were summarized and responses to each recommendation or issue were prepared by reviewing documents and other pertinent information, including personal field notes as well as those compiled by other LSA biologists. Mr. Lacy is the lead wildlife biologist and project manager for LSA on the Potrero Hills Landfill expansion project and has been conducting surveys and providing consulting services on various landfill parcels since 1995. He is extremely familiar with the habitats and species on the Phase II expansion and mitigation parcels.

Richard Nichols also reviewed comments in Chapter 5 of the scientific review panel report (Airola et al., 2007), particularly those comments that overlapped with the grazing issues. Mr. Nichols is licensed by the State Board of Forestry as Certified Rangeland Manager #45 and developed the grassland management plan for the mitigation parcels (LSA, 2007).

LSA wildlife biologists Steve Foreman, Eric Lichtwardt, Matt Ricketts, and Rebecca Doubleddee have also conducted numerous surveys on the PHLF parcels and contributed information to this report based on their own field observations.

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3.0 RESPONSES

3.1 IMPACT EVALUATION

3.1.1 Overview of Potentially Affected Species

Issue - Impacts to Special-status Species. The reviewer provided a list of special-status birds that potentially occur on the Phase II expansion site and/or mitigation parcels and listed his concerns for these species from the proposed project. The reviewer also lists five species for which no habitat occurs on the Phase II parcel or mitigation sites, yet which he believes could be affected by the landfill activities.

Response. This section responds to the issues raised by the reviewer by species. A list of species observed during bird surveys conducted in 2006 is included as the Appendix.

White-tailed Kite: Grasslands will be managed for wildlife and plant habitat values. In particular, heavy grazing that currently occurs on the site will be managed and timed to allow for residual vegetation on the mitigation lands each year (LSA, 2007). In addition, the large wet meadow on the Southern Hills will be fenced to control grazing, thereby increasing green grass, cover, and habitat for voles and other small mammals.

Northern Harrier: We agree with the reviewer that the regular presence of northern harriers indicates that they nest in the vicinity, however, no nests have ever been found on the Phase II parcel. It appears more likely that this species nest on the parcels around the valley or elsewhere in the hills. The GMP (LSA, 2007) proposes fencing swales and seeps as recommended by the reviewer.

Swainson's Hawk: We agree with the reviewer. During 2006, biologists conducted eight one-day surveys from February to June. No Swainson's hawks were observed during any of those surveys. Within Solano County, Swainson's hawk is known primarily from the northern part of the County with only a few records from the southern portion of the County. Records of Swainson's hawk occurrences have been mapped for the Solano County Habitat Conservation Plan showing the distribution in the County (Figure 4-27, (Solano County Water Agency, 2007)). Given that this species is wide ranging in their foraging, they may occasionally occur in the vicinity of the Potrero Hills, but they do not appear to use this area regularly or nest in this area and are not expected to be impacted by the proposed Phase II expansion project.

Golden Eagle: Golden eagles have nested offsite in trees located south of the Phase I landfill and west of the Southern Hills parcel. Since this land is not owned by the landfill, access to the nest site has not been possible, but biologists did observe golden

eagles in this area from vantage points on the landfill properties. We agree with the assessment that the Phase II expansion will result in the loss of some habitat for these eagles; however, this represents only a small portion of the grasslands in the hills. In addition, preservation and management of the mitigation parcels, particularly the absence of ground squirrel control, is expected to provide additional habitat value for this species. New power lines constructed in association with the new power plant or landfill expansion will incorporate raptor-safe construction standards as recommended.

Peregrine Falcon: We agree with the reviewer's assessment. This species has been observed in the eucalyptus trees on Griffith Ranch during the winter of 2006, but does not nest on the site or on the Phase II parcel. As the reviewer mentioned, large flocks of gulls and waterbirds on the playa pools north of the Griffith Ranch parcel likely attract this species to forage here. To minimize potential impacts to this species, to the maximum extent practicable, the eucalyptus trees on Griffith Ranch will remain in place. If not practical, additional trees may be planted on the Griffith Ranch parcel to provide replacement habitat.

Prairie Falcon: We agree with the reviewer's assessment.

Long-billed Curlew: Not all of the mitigation lands are dominated by hills and steep slopes. The Northern Griffith Ranch parcel and the Director's Guild parcels account for approximately 145 acres of the approximately 643 acres proposed for mitigation. These parcels are flat to mostly flat providing foraging habitat similar to the grasslands on the Phase II expansion parcel. Long-billed curlews have been observed foraging on the northern portion of the Griffith Ranch and adjacent properties.

Burrowing Owl: Burrowing owls are an infrequent visitor to the landfill parcels. Although burrowing owls have been observed singly during the winter on the Southern Hills parcel Phase II parcel, this species has not been observed to breed on or in the vicinity of the proposed expansion parcel or mitigation parcels. Surveys for this species were conducted in June 2006, and no burrowing owls were observed. By providing preserved grassland areas in the Potrero Hills with a managed grazing regime and an absence of ground squirrel control, in the future, burrowing owls may use this area more frequently for either wintering or for breeding.

Short-eared Owl: We agree with the reviewer. Measures in the GMP (LSA, 2007) will provide more suitable habitat conditions for this species on the mitigation sites, particularly the Southern Hills parcel.

Loggerhead Shrike: The landfill will incorporate isolated trees and shrubs on the planting on the mitigation parcels to provide nesting habitat for this species.

Grasshopper Sparrow: Although the reviewer lists this species as species of special concern, it is not currently listed as such in the CNDDB (California Natural Diversity

Data Base, 2007) or the most recent Special Animals List (California Department of Fish and Game, 2006). This species was observed on the Southern Hills site during mid-June 2006 and may nest there. Preservation of the Southern Hills, Griffith Ranch, and Director's Guild sites will provide potential nesting habitat for this species.

Tricolored Blackbird: Tricolored blackbirds have been observed foraging in the Potrero Hills Valley in the Pond 5 Buffer Area and on the recently covered face of the Phase I landfill. This species does not breed on either the Phase II expansion parcel or the proposed mitigation parcels. The fenced wet meadow on the Southern Hills may provide suitable nesting habitat for this species and the preserved grasslands would provide foraging habitat.

Species from Suisun Marsh that may be indirectly Affected by the Landfill

The reviewer proposes that five species, **California Back Rail, California Clapper Rail, Snowy Plover, California Least Tern, and Suisun Song Sparrow**, may be affected by the landfill activities by subsidizing predators of these species. We do not dispute the fact that crows and ravens are predators of these species; however, there is no evidence to suggest that the landfill activities at Potrero Hills Landfill are having significant impacts to these species. But we also acknowledge that the lack of evidence does not necessarily imply there is no impact. What we know is that both the snowy plover and California least tern colonies were discovered during 2006, 20 years into the operation of the Phase I landfill. The proposed landfill expansion also does not represent a new use at this site, but instead a continuation of the existing use. Additionally, the expansion is not expected to increase in the "working face" of the landfill, so whatever level of support for crows and ravens may be provided by the landfill will not increase. PHLF would be willing to investigate ways to minimize the subsidizing of the predator populations, but does not believe that sufficient nexus exists to require mitigation for impacts to these species.

3.1.2 Direct Project Effects

Issue – Habitat Loss. The reviewer's concern is that the Phase II expansion will reduce nesting and foraging habitat for a number of special-status species.

Response. The proposed Phase II expansion project will result in a loss of approximately 168 acres of grassland and associated wetlands that provide habitat for a number of special-status species including loggerhead shrikes (foraging), golden eagles (foraging), long-billed curlews (winter foraging), tricolored blackbirds (foraging), northern harrier (foraging), white-tailed kites (foraging), and burrowing owls (wintering habitat). None of these species are listed as threatened or endangered, but significant impacts to them warrant mitigation under CEQA. PHLF proposes to provide approximately 643 acres of habitat that will be preserved, enhanced and managed for wildlife and plant habitat values in perpetuity. An endowment will also be provided for the long term management and monitoring of the mitigation lands. Currently, none

of the mitigation or expansion lands are preserved or managed for wildlife habitat values, but instead they are managed solely for their value as grazing lands. Preservation and enhancement of these lands will benefit the suite of species that occur within the grassland habitats of the Potrero Hills and ensure that the hills remain populated by these species.

Issue - Direct Mortality. The reviewer's issue is that certain structures, such as the power lines, and collisions from operation activities will cause direct mortality to several bird species, particularly raptors and Loggerhead Shrikes.

Response. In order to minimize direct mortality to birds, raptor-safe construction standards will be employed in the construction of the power lines on the site. Since the power plant and sedimentation pond have been removed from the Griffith Ranch parcel, vehicle traffic in this area is expected to be minimal and collisions between birds and cars will be avoided.

Issue - Impacts from Lighting for Night Operations. The reviewer is concerned that the proposed increase in lighting for nighttime operation at the landfill could cause disorientation of passerines attracted to the lights when descending to land after nocturnal migration and disorientation of waterfowl or other waterbirds moving locally at night in winter, particularly during foggy weather.

Response. Currently, the landfill operates between 4 AM and 1 AM. The proposed project would increase the length of operations at the landfill from the current 21-hour per day schedule to a 24-hour per day schedule Monday through Friday and a 20-hour per day schedule on Saturday and Sunday beginning at 4 AM. This change will result in only 3 additional hours per day that the landfill operates during the nighttime hours. Existing conditions at the landfill, therefore, have the active face of the landfill artificially illuminated for about 5 to 9 hours per night, depending on the season. The proposed project would increase the daily hours of artificial night lighting by three hours each day, 5 days per week.

Numerous studies have documented a variety of effects of night lighting on wildlife, particularly migrating birds (Gauthreaux and Besler, 2006). Although these effects are sometimes dramatic, the effects appear to be most pronounced in situations where strong lights are projected skyward (e.g., searchlights, ceilometers), where lights are mounted high on towers (e.g., broadcast, communication, and transmission towers; lighthouses), or where tall buildings with many windows are illuminated. Lights focused toward the ground minimize the effect on flying birds and this is one method suggested as a way to minimize the effects of night lighting on wildlife (Gauthreaux, Jr. and Besler, 2006). Lighting at the landfill is focused on the active landfill face (at the ground) and not at the sky, thereby minimizing the potential effect of night lighting on wildlife in the area. In addition, for the life of the landfill, the active face will be below the southern ridgeline of the Potrero Hills, shielding the marsh from the light. As the landfill reaches its maximum height, the lights on the face of the landfill will become more visible, but will still be directed onto the landfill face and not into the marsh or sky.

Night lighting is currently used in landfill operations which contributes to the horizon glow effect that has been shown in some cases to affect migrating birds, particularly immature birds (Gauthreaux, Jr. and Besler, 2006); however, the landfill contributes only a small portion to the horizon glow in this region compared to the other light sources in the immediate vicinity. The largest contributors to the glow are the urban developments of Fairfield and Suisun City. Street lights and commercial centers in the cities are spread over many square miles and contribute the overwhelming amount of light to the horizon glow. In close proximity to the landfill and the marsh are Travis Air Force Base and the residential subdivision of Lawlor Ranch. Runways and facilities at the Air Force base are brightly lit at all times of the night and street lights and residential lighting shine all night long in the subdivision. Finally, State Highway 12, a major east west route across the state and a locally important travel corridor, lies directly north of the landfill. Cars passing along the highway further contribute to night lighting in the area and cumulatively to the horizon glow around the Fairfield/ Suisun area.

Although it is not possible to predict the effects of the few hours of extra night lighting on birds living in the vicinity of the landfill, it is unlikely that it will have significant changes on the lighting conditions in the area, particularly, given the other sources of light that contribute to the horizon glow in this region. In addition, employing measures to minimize glare offsite and focusing lights only on the active face of the landfill are expected to further reduce the effects of night lighting from the project. Accordingly, PHLF will shield lights so that they will shine only on the active face of the landfill. The light stanchions will be the minimum height necessary to illuminate the active face.

Issue - Impacts from Noise, Dust, or Vehicular Activity. It seems unlikely that noise, dust, or movement of equipment on and around the working face of the landfill would cause a substantial adverse impact on birds in the immediate vicinity. Noise in the immediate vicinity of the working face of the landfill likely has a limited adverse impact on birds in the area.

Response. The landfill will employ dust control measures as required under their existing and future permits. We agree with the reviewer that bird collisions in the immediate vicinity of the working face of the Landfill will likely be minimal. Outside the Landfill, bird collisions would not likely increase since there is no increase in truck traffic to and from the landfill. Highway 12 is the main east-west corridor for truck movement in the Delta and traffic volumes have steadily increased between 1992 and 2007. Collisions from landfill related truck traffic will likely compromise only a small portion of the total collisions that occur on the highway.

3.1.3 Indirect Project Effects

Issue - Impacts of Subsidized Predators. The reviewer is concerned that the Phase II landfill expansion project will result in an increase in the number of American Crows and Common Ravens – members of the family Corvidae (or corvids). Corvids are both known to be important predators on threatened and endangered species in California, therefore; an expansion in their populations would have adverse affects on native bird species around the landfill expansion area.

Response. As previously discussed, we agree that crows and ravens are predators and in specific instances can have significant effects on populations of rare species such as the least tern and snowy plover; however, there is no current evidence to suggest that the landfill activities at Potrero Hills Landfill are having significant impacts to these species. Both the snowy plover and California least tern colonies mentioned as a concern by the reviewer (Airola et al., 2007) were discovered during 2006, 20 years into the operation of the Phase I landfill.

Crows are widely distributed in Solano County and the populations are clearly supported by development and irrigated agriculture. Raven nesting also appears to possibly be expanding into the agricultural areas of the County, particularly along the major (230kv and 500kv) transmission line corridors where ravens are taking advantage of nest sites on the larger transmission line towers. With respect to the extensive amount of irrigated agriculture and development, the contribution of the landfill to countywide populations of these two species is minimal.

The proposed landfill expansion also does not represent a new use at this site, but instead a continuation of the existing use. Additionally, the expansion is not expected to increase the “working face” of the landfill, so whatever level of support for crows and ravens may be provided by the landfill will not increase. This working face of the landfill at any one point in time, as identified by the landfill operations, is on the order 0.2 acres, a relatively small and insignificant area in relation to other potential sources of corvid support in the region.

Issue - Cowbird Parasitism. The reviewer has concerns with the potential for increased cowbird parasitism as a result of the Phase II expansion project.

Response. We agree with the reviewer that the extent and magnitude of cowbird parasitism associated with or supported by the landfill is unknown. However, similar to the considerations for corvid populations, the proposed landfill expansion does not seem likely to increase cowbird populations. The proposed landfill expansion is a continuation of the existing use and will not increase the size of the “working face” of the landfill.

3.1.4 Cumulative Effects

Issue. The Phase II expansion would contribute to the cumulative effects of habitat loss and degradation from ongoing development in Solano County.

Response. The best available information on the cumulative effects of habitat loss and degradation from ongoing development in Solano County comes from estimates in the Draft Solano Habitat Conservation Plan (HCP). This plan only covers development activities within the six of the seven major cities within the County, and does not include growth outside of the urban limit lines; however, based on growth trends, it provides a relatively accurate estimate of anticipated development for the County as a whole. Urban growth in Solano County has been largely focused within the existing city boundaries. To preserve this pattern of growth and to protect agricultural lands and open space, the County adopted the Orderly Growth Initiative as part of the current Solano County General Plan. This Initiative prohibits re-zoning of land

designated as agriculture, marsh, or watershed without a countywide special election and approval by voters. While this current plan expires in 2009, the current direction of the revisions to the County General Plan follow the basic tenants of the orderly growth initiative and focus development within existing city-centered areas. Based on the Draft Solano HCP, the amount of urban development in the six participating cities is anticipated to increase by 12,300 acres (representing a 22 percent increase) within the next 20 to 25 years in order to meet projected regional growth (Solano County Water Agency 2007). Based on these numbers, the Phase II expansion represents approximately 1% of the cumulative habitat loss from projected development within the County. The project also contributes to the cumulative preservation and enhancement of valuable habitats in the County within this same period. The proposed mitigation represents a 4.1 to 4.6 percent increase in the total amount of preserved habitat projected to occur under the Draft HCP.

We agree with the reviewer that the Phase II expansion will “contribute to the cumulative effects of habitat loss and degradation from ongoing development in Solano County;” however, the proposed mitigation contributes a larger percentage basis to the anticipated total future habitat preservation in the County. Based on these calculations, we believe it to be a less than significant cumulative effect.

Regarding the cumulative impact of increased subsidized predators due to the nearby presence of the Hay Road Landfill, we do not necessarily agree that the Phase II expansion will result in a substantial increase in the number of corvids beyond that which already occurs on the Phase I site, since there will be no increase in the area of the “working face” around which corvids currently concentrate (see 3.3.1 above).

3.2 MITIGATION EVALUATION

3.2.1 Key Elements of the Mitigation Program

Issue. The reviewer asserts that the proposed mitigation is “entirely passive” for birds, and that most enhancement activities are to benefit CTS and associated wetlands.

Response. The reviewer is correct in interpreting that the majority of enhancement activities and associated monitoring are directed towards CTS and wetlands; this is a function of a regulatory environment that is weighted towards listed species (Endangered Species Act) and wetlands (Clean Water Act). A net loss of habitat for upland birds is an unavoidable impact of the project, but the in-perpetuity preservation and enhancement of 643 acres of grassland habitat should alleviate this impact (see 3.1.2 above).

3.2.2 Evaluation of the Mitigation Program

Issue. The reviewer’s primary concern is that the proposed mitigation is primarily focused on wetland habitat and species.

Response. Again, the MMP's greater focus on wetlands than on grasslands is due, in large part, to the increased regulatory protection afforded to federally listed species (CTS) and wetlands. The reviewer's comment that the GMP does not directly address how the proposed grazing regime will benefit birds is noted, more explicit explanations of how birds will be benefited will be included in the revised GMP.

3.2.3 Adequacy in Avoiding, Mitigating, and Compensating for Project Impacts

Issue. The reviewer is concerned that the proposed mitigation measures are not fully adequate to offset the impacts of the Phase II expansion.

Response. See our responses to individual mitigation recommendations below.

3.3 MITIGATION RECOMENDATIONS

3.3.1 Recommendations for Improvements to Management of Grazed Grasslands

Issue - Fence Wetter Areas to Enhance Nesting Habitat. "Fencing of some marshes, swales, and pond edges to allow the growth of tall marsh plants or grasses would provide for better nest concealment for some known nesting species, such as the Northern Harrier, and might induce others, such as the Tricolored Blackbird, to begin nesting on the site."

Response. The revised GMP (LSA, 2007) proposes fencing of two seasonal wetland/seep meadow areas for special management. This will allow for growth of tall grasses and emergent vegetation as recommended by the commenter.

Issue - Plant Isolated Trees and Shrubs. It also would be valuable to plant some isolated dense-foliaged trees or tall bushes within some of the grassland parcels to compensate for nest sites of the Loggerhead Shrike that would be lost to the Phase II expansion.

Response. Scattered plantings of woody riparian species will be conducted in appropriate locations such as the wet meadow enclosures mentioned in the previous response. This will be discussed in detail in the mitigation plan revisions to be prepared.

Issue - Enhance Grassland Habitat Value. It is good that the MMP proposes to reduce invasive non-native plants, such as thistles in grasslands, but it does not go far enough in proposing measures to improve the value of grasslands to birds.

Response. The revised GMP proposes to not only control invasive species, but to re-seed with native grassland species (see Response to Chapter 2 comment). In addition, moderate grazing as proposed in the GMP usually results in uneven grass heights, with a mosaic of patches of longer and shorter grass (Clawson et al., 1982). This is a desirable outcome for habitat objectives and will assure a moderate degree of habitat heterogeneity across the property.

Issue - Remove Artificial Predator Perches in Wetland Areas. The reviewer is concerned that the creation of artificial perches around created wetlands would decrease their value to migrant and breeding waterbirds.

Response. The only structures that could provide additional raptor perches are fence posts installed to fence various pastures as shown in the grassland management plan (LSA, 2007) and any new power lines constructed to serve the power plant on the Phase I landfill parcel. We will incorporate this recommendation into our mitigation plan and evaluate each constructed wetland area to determine if modifications to the fence posts to prevent raptor perching would be beneficial to waterbirds using the site.

3.3.2 Recommended Mitigation for Potential Corvid Impacts

Issue. Measures should be taken to reduce access of Corvids to anthropogenic food sources at the landfill.

Response. In order to minimize the effect of subsidizing corvid predators, PHLF will develop a corvid abatement program as recommended by the reviewer. The program expands the abatement program currently targeted at gulls that uses pyrotechnics, falcons, and dogs. Other measures will also be developed to limit food to the corvid predators, particularly during the spring breeding season. Measures will include minimizing the amount of time that waste is left uncovered, minimizing the active face of the landfill, and sufficiently compacting the waste to reduce its desirability as a food source or as feeding grounds. A monitoring program would be implemented to assess the success of the abatement program and to recommend and implement changes to the program as needed.

3.3.3 Additional Wetland Mitigation

Issue. Depending on the outcome of further analysis of the watershed effects of some proposed mitigation impoundments on downslope wetlands, some additional mitigation for Phase II project effects on wetlands may be needed.

Response. No additional wetland mitigation is anticipated beyond that described in the revised mitigation proposal. The hydrology report (Swanson Hydrology, 2007) indicates that there is sufficient runoff within the watersheds for the mitigation proposed.

3.3.4 Recommendations of Additions or Alternate Approaches to Mitigate Project Impacts

Issue. The reviewer raises the issue of the appropriateness of the mitigation sites being located next to the landfill.

Response. This issue is a complex one, that takes into consideration not only issues related to birds, but also existing populations of threatened species, designated critical habitat for listed species, and nexus between impact and mitigation. The PHLF MMP is designed to mitigate for significant impacts identified in the EIR. These significant impacts primarily deal with impacts to California tiger salamanders, a threatened species, and wetlands. Impacts to these resources are more appropriately mitigated for on site, or adjacent to the impact. Given the amount of habitat surrounding the Phase II expansion area all of the mitigation necessary to mitigate for these significant impacts can be accomplished using the onsite parcels. Use of these parcels acknowledges the long-term benefit of maintaining sensitive plant and animal populations in the Potrero Hills.

The primary concern of the reviewer for using onsite mitigation is the potential impacts to nesting birds from increased predation risk from corvids concentrated at the landfill. Mitigating impacts from habitat loss elsewhere in Solano County is not likely to decrease the impacts from corvids. Because of the prevalence of irrigated agriculture throughout the County and power lines, it can be argued that corvids are more abundant and more of a problem on the valley floor. Therefore, mitigating impacts to habitat loss in one of the mitigation banks, such as the Elsie M. Gridley Mitigation Bank or the North Suisun Mitigation Bank, would not alleviate this problem.

With respect to the Eastern Valley, PHLF has not included this parcel in the mitigation. The revised mitigation proposal includes over 643 acres of mitigation lands resulting in an approximately 3.8:1 mitigation ratio on a gross acreage basis. The Eastern Valley parcel will continue to be used as grazing land but is not included in the mitigation proposal.

The power plant has been relocated to the existing Phase I landfill, thereby eliminating the majority of impacts associated with this facility. The power plant will be constructed and operated to comply with all regulations governing such facilities, particularly related to emission of CO₂ and other combustion gases. Power lines serving the facility will be constructed using raptor-safe construction standards.

4.0 REFERENCES

4.1 LITERATURE CITED

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APPENDIX

ANIMAL SPECIES OBSERVED ON THE POTRERO HILLS LANDFILL PARCELS, SOLANO COUNTY 2006

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APPENDIX

Animal Species Observed on The Potrero Hills Landfill Parcelsⁱ, Solano County 2006

Common Name	Scientific Name	Date								Codes ⁱⁱ
		Pre-2006	2/3/06	3/8/06	3/22/06	3/28/06	4/14/06	5/18-19/06	6/12-14/06	
		# Individuals Observed								
AMPHIBIANS										
Pacific treefrog	<i>Pseudacris regilla</i>		calling		calling		1			R
California slender salamander	<i>Batrachoseps attenuatus</i>		2							R
California tiger salamander	<i>Ambystoma californiense</i>		2							R
REPTILES										
Gopher Snake	<i>Pituophis catenifer</i>		2		1		2			R
Ring-necked snake	<i>Diadophis punctatus</i>	2								
Common kingsnake	<i>Lampropeltis getula</i>	1								
Western fence lizard	<i>Sceloporus occidentalis</i>				3				x	R
BIRDS										
Canada goose	<i>Branta canadensis</i>						2			
Mallard	<i>Anus platyrhynchos</i>			10-20			10		2	

APPENDIX (continued)
Animal Species Observed on The Potrero Hills Landfill Parcelsⁱⁱⁱ, Solano County
2006

Common Name	Scientific Name	Date								Codes ^{iv}
		Pre-2006	2/3/06	3/8/06	3/22/06	3/28/06	4/14/06	5/18-19/06	6/12-14/06	
BIRDS (continued)										
Gadwall	<i>Anas strepera</i>						2			
American wigeon	<i>Ana americanus</i>			<10			8			
Cinnamon teal	<i>Anas cyanoptera</i>						2			
Northern shoveler	<i>Anus clypeata</i>						15			
Northern pintail	<i>Anas acuta</i>			<10			2			
Ring-necked duck	<i>Aythya collaris</i>			<10						
American white pelican	<i>Pelecanus erythrorhynchos</i>			3 (7) flying			25 (flying)			
Great blue heron	<i>Ardea herodias</i>			1						
Turkey vulture	<i>Cathartes aura</i>		10	2 (4)	10			1	1	R
Great Egret	<i>Ardea alba</i>			3			1			
Northern harrier	<i>Circus cyaneus</i>		4	2	3		1			R/W/T
White-tailed kite	<i>Elanus leucurus</i>		4-6							R
Northern harrier	<i>Circus cyaneus</i>							1	2	R
Red-tailed hawk	<i>Buteo jamaicensis</i>		3-4	3-4			1			R/W
Ferruginous hawk	<i>Buteo regalis</i>		2							W
Golden eagle	<i>Aquila chrysaetos</i>		2	1	2		1		1	R

APPENDIX (continued)
Animal Species Observed on The Potrero Hills Landfill Parcelsⁱⁱⁱ, Solano County
2006

Common Name	Scientific Name	Date								Codes ^{iv}
		Pre-2006	2/3/06	3/8/06	3/22/06	3/28/06	4/14/06	5/18-19/06	6/12-14/06	
BIRDS (continued)										
American kestrel	<i>Falco sparverius</i>		4-5	2	2			2	2	R
Merlin	<i>Falco columbarius</i>						1			
Peregrine falcon	<i>Falco peregrinus</i>		1							W/T
Black-necked stilt	<i>Himantopus mexicanus</i>						25			
American avocet	<i>Recurvirostra americana</i>			20-25			2			
Killdeer	<i>Charadrius vociferous</i>		5	3	5		2	2	2	R/W
Greater yellowlegs	<i>Tringa melanoleuca</i>		2-3	2-3	1		6			
Long-billed curlew	<i>Numenius americanus</i>		20-25							W
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>						25			
Ring-billed gull	<i>Larus delawarensis</i>		20-25	20-25						W/T
California gull	<i>Larus californicus</i>		20-25	20-25	35					W/T
Barn owl	<i>Tyto alba</i>		2				1			R
Great horned owl	<i>Bubo virginianus</i>						1			
Burrowing owl	<i>Athene cunicularia</i>		1		1					R?/W
Rock pigeon	<i>Columba livia</i>						10			
Mourning dove	<i>Zenaida macroura</i>		5-10	5-10			10			R

APPENDIX (continued)
Animal Species Observed on The Potrero Hills Landfill Parcelsⁱⁱⁱ, Solano County
2006

Common Name	Scientific Name	Date								Codes ^{iv}
		Pre-2006	2/3/06	3/8/06	3/22/06	3/28/06	4/14/06	5/18-19/06	6/12-14/06	
BIRDS (continued)										
Anna's hummingbird	<i>Calypte anna</i>		1							R
Northern flicker	<i>Colaptes auratus</i>		2							R
Black phoebe	<i>Sayornis nigricans</i>		1	1						R
Say's phoebe	<i>Sayornis saya</i>		3-4	3-4						W
Western kingbird	<i>Tyrannus verticalis</i>							2	1	
Loggerhead shrike	<i>Lanius ludovicianus</i>		3-4	3-4	2		1		1	R
American crow	<i>Corvus brachyrhynchos</i>						1			
Common raven	<i>Corvus corax</i>			3	5		3	x	x	R
Tree swallow	<i>Tachycineta bicolor</i>		25							S
Violet-green swallow	<i>Tachycineta thalassina</i>				5-10					M
Cliff swallow	<i>Petrochelidon pyrrhonota</i>				20-25		25	x	x	M/S
Barn swallow	<i>Hirundo rustica</i>				5				x	M/S
Rock wren	<i>Salpinctes obsoletus</i>		2							S
European starling*	<i>Sturnus vulgaris</i>		<500		10		10			R
Yellow-rumped warbler	<i>Dendroica coronata</i>		25-30	<10			5			W

APPENDIX (continued)
Animal Species Observed on The Potrero Hills Landfill Parcelsⁱⁱⁱ, Solano County
2006

Common Name	Scientific Name	Date								Codes ^{iv}
		Pre-2006	2/3/06	3/8/06	3/22/06	3/28/06	4/14/06	5/18-19/06	6/12-14/06	
BIRDS (continued)										
Savannah sparrow	<i>Passerculus sandwichensis</i>		25-30	20-25	15		2			W
Grasshopper sparrow	<i>Ammodramus savannarum</i>								4-6	S
White-crowned sparrow	<i>Zonotrichia leucophrys</i>		15-20				1			W
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>			<5						W
Dark-eyed junco	<i>Junco hyemalis</i>		10-15							R
Tricolored blackbird	<i>Agelaius tricolor</i>		<500	<100	10		125		5-15	W/T
Red-winged blackbird	<i>Agelaius phoeniceus</i>		<500	<100	15		25		x	SW
Western meadowlark	<i>Sturnella neglecta</i>		<100	<50	15-20		40	x	x	R/W
Brewer's blackbird	<i>Euphagus cyanocephalus</i>		<100	<100	15			x	x	R
Brown-headed cowbird	<i>Molothrus ater</i>							2		
American goldfinch	<i>Carduelis tristis</i>		25-30					x		R/T
American pipit	<i>Anthus rubescens</i>			<10			2			

APPENDIX (continued)
Animal Species Observed on The Potrero Hills Landfill Parcels^v, Solano County
2006

Common Name	Scientific Name	Date								Codes ^{vi}
		Pre-2006	2/3/06	3/8/06	3/22/06	3/28/06	4/14/06	5/18-19/06	6/12-14/06	
MAMMALS										
Virginia opossum	<i>Didelphis virginiana</i>		remains							R
Ornate shrew	<i>Sorex ornatus</i>		1	1						R
Black-tailed jackrabbit	<i>Lepus californicus</i>		3-4	2			1			R
California ground squirrel	<i>Spermophilus beecheyi</i>		<10 = burrows	<10			20	x	x	R
Botta's pocket gopher	<i>Thomomys bottae</i>		mounds	mounds	mounds		mounds			R
Deer mouse	<i>Peromyscus maniculatus</i>		4-5				5			R
Western harvest mouse	<i>Reithrodontomys megalotis</i>		1							R
California vole	<i>Microtus californicus</i>						2			
Raccoon	<i>Procyon lotor</i>		tracks				tracks			R

ⁱ Parcels = Phase II Expansion parcel, Pond 5 Buffer Area, Southern Hills, Griffith Ranch, and Director's Guild

ⁱⁱ The codes refer to the species presumed seasonal occurrence on the site and probable breeding/nesting status (breeding was not confirmed in most cases).

M = Migrant: Uses the site for brief periods of time, primarily during the spring and fall months.
R = Year-round resident: resident/expected to nest/breed on-site or in the vicinity.
S = Spring/summer resident: May nest on-site or in the vicinity.
T = Transient: May use the site regularly but unlikely to nest on-site.
W = Winter visitor: Regularly present during winter; does not nest locally.
F = Fly over.
* = Non-native species.

ⁱⁱⁱ Parcels = Phase II Expansion parcel, Pond 5 Buffer Area, Southern Hills, Griffith Ranch, and Director's Guild

^{iv} The codes refer to the species presumed seasonal occurrence on the site and probable breeding/nesting status (breeding was not confirmed in most cases).

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